

1 Amendments to the Claims

2
3 1. (Currently Amended) A computerized method comprising:
4 identifying, from a plurality of objects, a set of core objects for a data
5 structure corresponding to a community of objects by identifying one or more
6 objects that are referenced by at least a threshold number of other objects of the
7 plurality of objects; and
8 expanding, based on the set of core objects, the data structure
9 corresponding to the community of objects to include a set of affiliated objects.
10

11 2. (Original) A method as recited in claim 1, further comprising:
12 repeating the identifying and expanding for a plurality of communities of
13 objects, wherein the objects in each community of objects are all from the plurality
14 of objects.
15

16 3. (Original) A method as recited in claim 2, further comprising:
17 merging together a first community of the plurality of communities and a
18 second community of the plurality of communities if there is sufficient similarity
19 between the core objects in the first community and the core objects in the second
20 community, wherein the merging results in a merged community including all of
21 the objects of the first community and the second community and having a set of
22 core objects that includes the core objects in the first community and the core
23 objects in the second community.
24
25

1 4. (Original) A method as recited in claim 2, further comprising:
2 merging together a first community of the plurality of communities and a
3 second community of the plurality of communities if there is sufficient similarity
4 between the core and affiliated objects in the first community and the core and
5 affiliated objects in the second community.

6
7 5. (Original) A method as recited in claim 2, further comprising:
8 identifying a first community of the plurality of communities and a second
9 community of the plurality of communities;
10 determining whether the first community and second community satisfy
11 one or more constraints; and
12 merging the first community and the second community if the one or more
13 constraints are satisfied, wherein the merging results in a merged community
14 including all of the objects of the first community and the second community.

15
16 6. (Original) A method as recited in claim 2, wherein one of the
17 plurality of objects is one of the set of core objects for the community of objects,
18 and is one of the set of affiliated objects for another community of objects.

19
20 7. (Original) A method as recited in claim 2, wherein one of the
21 plurality of objects is one of the set of core objects for multiple communities.

22
23 8. (Original) A method as recited in claim 2, wherein one of the
24 plurality of objects is one of the set of affiliated objects for multiple communities.
25

1 9. (Currently Amended) A method as recited in claim 1, wherein
2 identifying the set of core objects ~~for the community~~ comprises:
3 identifying links between objects of the plurality of objects;
4 finding groups of objects of the plurality of objects that satisfy a link
5 threshold; and
6 identifying, as a core set, one or more of the groups of objects that satisfy
7 the link threshold.

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9 10. (Canceled)

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11 11. (Currently Amended) A method as recited in claim 1, wherein
12 expanding the data structure corresponding to the community of objects
13 comprises:

14 identifying links between objects of the plurality of objects;
15 identifying one or more objects of the plurality of objects, wherein a link
16 exists from each of the identified one or more objects to at least one of the core
17 objects of the set of core objects; and
18 including, in the set of affiliated objects, each of the identified one or more
19 objects.

20
21 12. (Currently Amended) A method as recited in claim 11, further
22 comprising:

23 assigning the set of core objects to a center portion of a
24 graphics-independent model;
25 ranking each affiliated object in the set of affiliated objects; and

1 assigning each affiliated object in the set of affiliated objects to a particular
2 concentric portion around the center of the model in accordance with the rank of
3 the affiliated object.

4
5 13. (Original) A method as recited in claim 11, further comprising:
6 ranking each affiliated object in the set of affiliated objects in accordance
7 with the number of links from the affiliated object to core objects of the set of core
8 objects, wherein affiliated objects having a larger number of links to core objects
9 have higher rankings.

10
11 14. (Original) A method as recited in claim 1, wherein each of the
12 plurality of objects comprises a document.

13
14 15. (Original) A method as recited in claim 14, further comprising:
15 identifying a plurality of links, wherein each link links one object to
16 another object, and wherein each of the plurality of links represents a citation in
17 one document to another document.

18
19 16. (Original) A method as recited in claim 1, wherein each of the
20 plurality of objects comprises a person.

21
22 17. (Original) A method as recited in claim 16, further comprising:
23 identifying a plurality of links, wherein each link links one object to
24 another object, and wherein each of the plurality of links represents a relationship
25 of one person to another person.

1
2 18. (Original) A method as recited in claim 1, wherein each of the
3 plurality of objects comprises a web page.
4

5 19. (Original) A method as recited in claim 18, further comprising:
6 identifying a plurality of links, wherein each link links one object to
7 another object, and wherein each of the plurality of links represents a hyperlink in
8 one web page to another web page.
9

10 20. (Currently Amended) One or more computer readable media
11 having stored thereon a plurality of instructions that, when executed by one or
12 more processors of a device, causes the one or more processors to, at least:

13 identify, from a plurality of objects, a first collection of objects to be [[a]]
14 core objects of a community by identifying one or more objects that are referenced
15 by at least a threshold number of other objects of the plurality of objects;

16 identify, from the plurality of objects, a second collection of objects that are
17 linked to the first collection of objects to be affiliate objects of the community;

18 add, to a data structure corresponding to the community, the first collection
19 of objects; and

20 add, to the data structure corresponding to the community, the second
21 collection of objects.
22

23 21. (Canceled)
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1 22. (Currently Amended) One or more computer readable media as
2 recited in claim 20, wherein the plurality of instructions, when executed by the one
3 or more processors, further cause the one or more processors to, at least:

4 identify, from the plurality of objects, additional first collections of objects
5 to be ~~cores~~ core objects of additional communities;

6 identify, from the plurality of objects, additional second collections of
7 objects that are linked to the first collections of objects to be affiliated objects of
8 the additional communities;

9 add, to data structures corresponding to the additional communities,
10 respective additional first collections of objects; and

11 add, to the data structures corresponding to the additional communities, the
12 respective additional second collections of objects.

13
14 23. (Original) One or more computer readable media as recited in
15 claim 22, wherein the plurality of instructions, when executed by the one or more
16 processors, further cause the one or more processors to:

17 merge together a first of the communities and a second of the communities
18 if there is sufficient similarity between the core objects in the first of the
19 communities and the core objects in the second of the communities, wherein the
20 merge results in a merged community including all of the objects of the first of the
21 communities and the second of the communities and having a set of core objects
22 that includes the core objects in the first of the communities and the core objects in
23 the second of the communities.
24
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24. (Original) One or more computer readable media as recited in claim 22, wherein the plurality of instructions, when executed by the one or more processors, further cause the one or more processors to:

merge together a first of the communities and a second of the communities if there is sufficient similarity between the core and affiliated objects in the first of the communities and the core and affiliated objects in the second of the communities.

25. (Canceled)

26. (Original) One or more computer readable media as recited in claim 22, wherein the link threshold comprises a minimum number of objects in the plurality of objects that must each link to each object in the group.

27. (Canceled)

28. (Currently Amended) One or more computer readable media as recited in claim 20, wherein the plurality of instructions, when executed by the one or more processors, further cause the one or more processors to, at least:

assign the first collection of objects to a center portion of a graphics-independent model;

rank each object of the second collection of objects; and

assign each object of the second collection of objects to a particular concentric portion around the center of the model in accordance with the rank of the object.

29. (Currently Amended) A system to mine communities from a plurality of objects, the system comprising:

a processor; and

a memory coupled to the processor, wherein the memory includes one or more instructions that cause the processor to at least:

identify, from the plurality of objects, one or more core object sets from the plurality of objects by identifying one or more objects that are referenced by at least a threshold number of other objects of the plurality of objects, wherein each core object set is ~~a core of~~ incorporated into a data structure defining a community; and

for each of the core object sets, expand the data structure defining the community to include a set of affiliated objects, wherein the expansion is based on the core object set of the community.

30. (Original) A system as recited in claim 29, wherein the one or more instructions further cause the processor to:

repeat the identification and expansion for a plurality of communities of objects, wherein the objects in each community of objects are all from the plurality of objects.

31. (Original) A system as recited in claim 29, wherein the one or more instructions that cause the processor to identify the one or more core object sets comprises one or more instructions that cause the processor to:

identify links between objects of the plurality of objects;

1 find groups of objects of the plurality of objects that satisfy a link
2 threshold; and

3 identify, as a core object set, one or more of the groups of objects that
4 satisfy the link threshold.

5
6 32. (Canceled)

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8 33. (Currently Amended) A system implemented at least in part in
9 a computing device, the system comprising:

10 a core set identification module to identify core sets of objects for data
11 structures corresponding to communities from a plurality of objects by identifying
12 one or more objects that are referenced by at least a threshold number of other
13 objects of the plurality of objects; and

14 a community expansion module to expand the data structures
15 corresponding to the communities by adding sets of affiliated objects to data
16 structures corresponding to the communities, wherein the expansion of ~~a~~
17 ~~community~~ is based at least in part on ~~the~~ at least one core set of objects of ~~the~~
18 ~~community and links from objects of the plurality of objects to the core set of~~
19 ~~objects of the community.~~

20
21 34. (Original) A system as recited in claim 33, wherein the core set
22 identification module is further to:

23 identify links between objects of the plurality of objects;

24 find groups of objects of the plurality of objects that satisfy a link
25 threshold; and

1 identify, as a core object set, one or more of the groups of objects that
2 satisfy the link threshold.

3
4 35. (Original) A system as recited in claim 33, wherein the
5 community expansion module is further to:

6 identify links between objects of the plurality of objects; and
7 for each community,

8 identify one or more objects of the plurality of objects, wherein a
9 link exists from each of the identified one or more objects to at least one of
10 the objects of the core object set of the community, and

11 include, in the set of affiliated objects of the community, each of the
12 identified one or more objects.

13
14 36. (Original) A system as recited in claim 33, further comprising:

15 a core set merging module to merge together a first of the communities and
16 a second of the communities if there is sufficient similarity between the core
17 objects in the first of the communities and the core objects in the second of the
18 communities, wherein the core set merging module generates a merged
19 community that includes all of the objects of the first of the communities and the
20 second of the communities and has a set of core objects that includes the core
21 objects from the first of the communities and the core objects from the second of
22 the communities.

1 37. (Original) A system as recited in claim 33, further comprising:
2 a community merging module to merge together a first of the communities
3 and a second of the communities if there is sufficient similarity between the core
4 and affiliated objects of the first of the communities and the core and affiliated
5 objects of the second of the communities.

6
7 38. (Currently Amended) A method comprising:
8 grouping a first collection of a plurality of objects into a center portion;
9 grouping a second collection of the plurality of objects into a plurality of
10 concentric portions around the center portion so that all objects of the second
11 collection that are grouped in a particular one of the concentric portions have a
12 same rank; and

13 ~~identifying, as the instantiating a~~ community of objects[[],] corresponding
14 to a graphics-independent model comprising the groupings of the first and second
15 collections of the objects.

16
17 39. (Previously Presented) A method as recited in claim 38, wherein
18 both the center portion and the plurality of concentric portions collectively are a
19 set of concentric circles.

20
21 40. (Original) A method as recited in claim 38, wherein the center
22 portion comprises a circle.
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41. (Previously Presented) A method as recited in claim 38, wherein the each of the plurality of concentric portions comprises a circle.

42. (Original) A method as recited in claim 38, wherein the first collection of the objects comprises a core set of objects.

43. (Original) A method as recited in claim 38, wherein each object of the second collection of the objects comprises an affiliated object.

44. (Currently Amended) One or more computer readable media having stored thereon a plurality of instructions that, when executed by one or more processors of a device, causes the one or more processors to describe a community of objects by at least:

creating a set of concentric data circles;

assigning a group of core objects of the community to the center data circle of the set of concentric data circles; and

assigning a group of affiliated objects of the community to a plurality of data circles of the set of concentric data circles, wherein the plurality of data circles surround the center data circle, and wherein all of the objects of the group of affiliated objects having a same rank are assigned to a same one of the set of concentric data circles.

45. (New) The computerized method of claim 1, wherein each reference is associated with a weight corresponding to a reference type.

1 46. (New) The computerized method of claim 45, wherein:
2 each weight corresponds to a numeric value; and
3 the threshold number is a function of, at least, the numeric value
4 corresponding to the weight associated with at least one reference.

5
6 47. (New) The computerized method of claim 45, wherein:
7 each weight corresponds to a numeric value; and
8 each object in the community is ranked as a function of, at least, the
9 numeric value corresponding to the weight associated with at least one reference
10 to the object.

11
12 48. (New) The computerized method of claim 45, wherein the
13 data structure corresponding to the community of objects comprises:
14 the set of core objects;
15 the set of affiliated objects; and
16 a programmatic function for measuring a degree of affiliation between two
17 objects of the community based on, at least, the weight associated with at least one
18 reference in a reference chain between the two objects.

19
20 49. (New) The computerized method of claim 29, wherein:
21 at least two core object sets are identified from the plurality of objects; and
22 a decision to merge the at least two core object sets is based on a set of
23 conditions comprising a condition specifying that a ratio of a minimum size of one
24 of the at least two core object sets to a size of an intersection of the at least two
25 core object sets is less than 2.